We claim:

1. A method, comprising:

sensing a first signal representative of electrical activity at a first cardiac region, the first signal including a QRS-cardiac complex representative of a cardiac cycle sensed in the first cardiac region;

sensing a second signal representative of electrical activity at a second cardiac region, the second signal including the QRS-cardiac complex as sensed in the second cardiac region;

selecting a first feature of the first signal, where the first feature includes a first portion of the QRS-cardiac complex which is repeatably identifiable in subsequent QRS-cardiac complexes;

selecting a second feature of the second signal, where the second feature includes a second portion of the QRS-cardiac complex which is repeatably identifiable in subsequent QRS-cardiac complexes;

during a tachycardia episode, determining a time difference between the first feature and the second feature;

comparing the time difference to a template time difference, where the template time difference is determined from the time difference between the first feature and the second feature for a plurality QRS-cardiac complexes during normal sinus rhythm; and

if the time difference exceeds the template time difference value by a predetermined margin, characterizing the QRS-cardiac complex as a ventricular tachycardia complex.

2. The method of claim 1, where the first portion and the second portion of the QRS-cardiac complex which are repeatably identifiable in subsequent QRS-cardiac complexes is a maximum deflection of the QRS-cardiac

complex.

3. The method of claim 2, including:

for the plurality of QRS-cardiac complexes sensed during normal sinus rhythm, determining a first median signal amplitude for the first feature relative a baseline signal of the first signal, and a second median signal amplitude for the second feature relative a baseline signal of the second signal;

for the QRS-cardiac complex, determining a first signal amplitude for the first feature relative the baseline signal of the first signal and a second signal amplitude for the second feature relative the baseline signal of the second signal; and

when either the first signal amplitude exceed the first median signal amplitude by a predetermined amount or the second signal amplitude exceed the second median signal amplitude by the predetermined amount, characterizing the QRS-cardiac complex as a ventricular tachycardia complex.

4. The method of claim 1, where the first portion and the second portion of the QRS-cardiac complex which are repeatably identifiable is a predetermined deviation of the first signal from a baseline signal of the first signal and of the second signal from a baseline signal of the second signal indicating a beginning of the QRS-cardiac complex.

5. The method of claim 1, where the first portion and the second portion of the QRS-cardiac complex which are repeatably identifiable is a return of the first signal to a baseline signal of the first signal within a predetermined time window and of the second signal to a baseline signal of the second signal for the predetermined time window, indicating an ending of the QRS-cardiac complex.

6. The method of claim 1, where the first portion and the second portion of the QRS-cardiac complex which are repeatably identifiable in subsequent QRS-cardiac complexes is a region having the largest slope along the QRS-cardiac complex.

7. The method of claim 1, where sensing the first signal includes sensing the electrical activity with a far-field sensing channel, and sensing the second signal includes sensing the electrical activity with a near-field sensing channel.

8. The method of claim 7, determining the time difference includes determining the time difference between a maximum deflection along the first signal and a region having the largest slope along the second signal.

9. The method of claim 1, including recalculating the template time difference when the template time difference has a variability of greater than 20 percent.

10. The method of claim 1, including:

during a tachycardia episode, sensing the first signal and the second signal for a plurality of QRS-cardiac complexes;

determining a percentage of ventricular tachycardia complexes in the plurality of QRS-cardiac complexes; and

applying therapy for treating a ventricular tachycardia when the percentage of ventricular tachycardia complexes exceeds a predetermined percentage threshold.

11. The method of claim 10, where the predetermined percentage

threshold is 50 percent.

12. The method of claim 1, including characterizing the QRS-cardiac complex as a ventricular tachycardiac complex when the time difference exceeds the template time difference value by approximately 10 milliseconds.

13. The method of claim 1, including:

determining a first normal sinus rhythm (NSR) representative complex and a second NSR representative complex from the plurality QRS-cardiac complexes sensed during NSR; and

if the time difference is less than the template time difference value, comparing the morphology of the QRS-cardiac complex sensed in the second signal to the morphology of the second NSR representative complex to determine whether the QRS-cardiac complex is a ventricular tachycardia complex.

14. The method of claim 13, including:

if the time difference is less than the template time difference value, comparing the morphology of the QRS-cardiac complex sensed in the first signal to the morphology of the first NSR representative complex to determine whether the QRS-cardiac complex is a ventricular tachycardia complex.

15. The method of claim 13, including:

positioning the QRS-cardiac complex, as sensed in the first signal and the second signal, and the first NSR representative complex and the second NSR representative complex in a comparison window;

aligning the first portion of the QRS-cardiac complex sensed in the first signal with the first portion of the first NSR representative complex in the

comparison window; and

comparing the morphology of the QRS-cardiac complex as sensed in the second signal to the morphology of the second NSR representative complex to determine whether the QRS-cardiac complex is a ventricular tachycardia complex.

16. The method of claim 1, including:

determining a first normal sinus rhythm (NSR) representative complex and a second NSR representative complex from the plurality QRS-cardiac complexes sensed during NSR; and

if the time difference is less than the template time difference value, comparing the morphology of the QRS-cardiac complex sensed in the first signal to the morphology of the first NSR representative complex to determine whether the QRS-cardiac complex is a ventricular tachycardia complex.

17. The method of claim 16, including:

positioning the QRS-cardiac complex, as sensed in the first signal and the second signal, and the first NSR representative complex and the second NSR representative complex in a comparison window;

aligning the first portion of the QRS-cardiac complex sensed in the second signal with the first portion of the second NSR representative complex in the comparison window; and

comparing the morphology of the QRS-cardiac complex as sensed in the first signal to the morphology of the first NSR representative complex to determine whether the QRS-cardiac complex is a ventricular tachycardia complex.

18. The method of claim 1, including:

selecting one or more features of the first signal where each of the one or more features include a first portion of the QRS-cardiac complex which is repeatably identifiable in subsequent QRS-cardiac complexes;

selecting one or more features of the second signal, where each of the one or more features include a second portion of the QRS-cardiac complex which is repeatably identifiable in subsequent QRS-cardiac complexes;

creating a comparison template from normal sinus rhythm complexes, where the comparison template has a plurality of values derived from the one or more features on the first signal and the second signal of the normal sinus rhythm complexes;

determining the plurality of values derived from the one or more features of the first signal and the one or more features of the second signal of the QRS-cardiac complex;

comparing each of the plurality of values of the cardiac complex to each corresponding value in the comparison template; and

if one or more of the plurality of values of the cardiac complex exceed the corresponding value in the comparison template by a predetermined margin, characterizing the QRS-cardiac complex as a ventricular tachycardia complex.

19. The method of claim 1, including

sensing a third signal representative of electrical activity at a third cardiac region, the third signal including a QRS-cardiac complex representative of a cardiac cycle sensed in the third cardiac region;

selecting one or more features of the first signal where each of the one or more features include a first portion of the QRS-cardiac complex which is repeatably identifiable in subsequent QRS-cardiac complexes;

selecting one or more features of the second signal where each of the one or more features include a second portion of the QRS-cardiac complex which is

repeatably identifiable in subsequent QRS-cardiac complexes;

selecting one or more features of the third signal, where each of the one or more features include a third portion of the QRS-cardiac complex which is repeatably identifiable in subsequent QRS-cardiac complexes;

creating a comparison template from normal sinus rhythm complexes, where the comparison template has a plurality of values derived from the one or more features on the first signal, the second signal and the third signal of the normal sinus rhythm complexes;

determining the plurality of values derived from the one or more features of the first signal, the one or more features of the second signal and the one or more features of the third signal of the cardiac complex;

comparing each of the plurality of values of the cardiac complex to each corresponding value in the comparison template; and

if one or more of the plurality of values of the cardiac complex exceed the corresponding value in the comparison template by a predetermined margin, characterizing the QRS-cardiac complex as a ventricular tachycardia complex.

20. The method of claim 19, including deriving the plurality of values from time differences between the one or more features on the first signal, the second signal and the third signal.

21. A method, comprising:

sensing a first signal representative of electrical activity at a first cardiac region, the first signal including a QRS-complex representative of a cardiac cycle sensed in the first cardiac region;

sensing a second signal representative of electrical activity at a second cardiac region, the second signal including the QRS-complex as sensed in the second cardiac region;

determining a first slope of the first signal;

determining a second slope of the second signal;

determining a representative slope for the first signal for a plurality of normal sinus rhythm complexes;

determining a representative slope for the second signal for the plurality of normal sinus rhythm complexes;

during a tachycardia episode, comparing the first slope for a QRS-cardiac complex to the representative slope for the first signal and comparing the second slope for the QRS-cardiac complex to the representative slope for the second signal; and

when the first slope is less than the representative slope for the first signal by a predetermined amount or the second slope is less than the representative slope for the second signal by the predetermined amount, characterizing the QRS-cardiac complex as a ventricular tachycardia complex.

22. The method of claim 21, where the first slope is a maximum slope along the first signal, and the second slope is the maximum slope along the second signal.

23. The method of claim 21, where the predetermined amount is greater than or equal to 20 percent.

24. A method, comprising:

sampling a first signal representative of electrical activity at a first cardiac region;

sampling a second signal representative of electrical activity at a second cardiac region, where the first signal and the second signal are sensed using different cardiac sensing channels;

selecting a first feature of the first signal, where a selection criterion is used to identify the first feature;

selecting a second feature of the second signal, where the selection criterion is used to identify the second feature;

for a plurality of normal sinus rhythm complexes, determining a median signal amplitude for the first feature relative a baseline signal of the first signal, and a median signal amplitude for the second feature relative a baseline signal of the second signal;

during a tachycardia episode, determining a signal amplitude for the first feature relative the baseline signal of the first signal and the second feature relative the baseline signal of the second signal for a cardiac complex; and

when the signal amplitude for the first feature exceeds the median signal amplitude for the first feature by a predetermined amount or the signal amplitude of the second feature exceeds the median signal amplitude for the second feature by the predetermined amount, characterizing the cardiac complex as a ventricular tachycardia complex.

25. The method of claim 24, where the selection criterion is determining a maximum deflection of the first signal and the second signal.

26. The method of claim 24, including redetermining the median signal amplitude for the first feature and the median signal amplitude for the second feature when either the median signal amplitude for the first feature or the median signal amplitude for the second feature have a variability of greater than 20 percent.

27. The method of claim 24, including:

sampling a plurality of cardiac complexes;

determining a percentage of ventricular tachycardia complexes in the plurality of cardiac complexes; and

applying therapy for treating a ventricular tachycardia when the percentage exceeds a predetermined percentage threshold.

28. The method of claim 27, where the predetermined percentage threshold is 50 percent.

29. A system, comprising:

at least one catheter;

a sensing system attached to the at least one catheter; and

a control system attached to the sensing system, where the control system monitors a first signal and a second signal for cardiac complexes;

a morphology analyzer circuit coupled to the control system, where the morphology analyzer circuit locates a first feature on the first signal and a second feature on the second signal;

a signal feature comparison circuit coupled to the morphology analyzer circuit, where the signal feature comparison circuit determines a time difference between the first feature and the second feature on a tachycardia complex and compares the time difference to a template time difference determined from the time difference between the first feature and the second feature for a plurality of cardiac complexes sensed during normal sinus rhythm; and

where the control system designates the tachycardiac complex as a ventricular tachycardia complex when the time difference exceeds the template time difference by a predetermined margin.

30. The system of claim 29, where the morphology analyzer circuit locates the first feature at a maximum deflection of the first signal and locates the second feature at a maximum deflection of the second signal.

31. The system of claim 30, where the control system determines a first median signal amplitude of the first feature relative a baseline signal for the first signal for the plurality of complexes sensed during normal sinus rhythm and a second median signal amplitude of the second feature relative a baseline signal for the second signal for the plurality of complexes sensed during normal sinus rhythm;

the morphology analyzer circuit determines for the tachycardiac complex a first signal amplitude for the first feature and a second signal amplitude for the second feature; and

the control system designates the tachycardiac complex as a ventricular tachycardia complex when the signal feature comparison circuit determines either the first signal amplitude exceeds the first median signal amplitude by a predetermined amount or the second signal amplitude exceeds the second median signal amplitude by the predetermined amount.

32. The system of claim 29, where the morphology analyzer circuit locates the first feature at a beginning of the tachycardiac complex as indicated by a predetermined deviation of the first signal from a baseline signal of the first signal and locates the second feature at the beginning of the tachycardiac complex as indicated by the predetermined deviation of the second signal from a baseline signal of the second signal.

33. The system of claim 29, where the morphology analyzer circuit locates the first feature at an ending of the tachycardiac complex as indicated by a

return of the first signal to a baseline signal of the first signal within a predetermined time window and by a return of the second signal to a baseline signal of the second signal for the predetermined time period.

34. The system of claim 29, where the morphology analyzer circuit locates the first feature at a region having the largest slope along first signal and the second feature at the region having the largest slope along the second signal.

35. The system of claim 29, where the sensing system includes a far-field sensing channel through which the first signal is received and a near-field sensing channel though which the second signal is received.

36. The system of claim 35, where the morphology analyzer circuit locates the first feature at a maximum deflection of the first signal and locates the second feature at the region having the largest slope along the second signal; and

the signal feature comparison circuit determines a time difference between the first feature and the second feature on the tachycardia complex and compares the time difference to the template time difference determined from the time difference between the first feature and the second feature for the plurality of complexes sensed during normal sinus rhythm.

37. The system of claim 29, where the control system monitors the first signal and the second signal for cardiac complexes sensed during a tachycardia episode, and the control system determines a percentage of tachycardia complexes designated as ventricular tachycardia complexes.

38. The system of claim 29, where the template time difference is

approximately 10 milliseconds.

39. The system of claim 29, including a template generator attached to the control system, where the template generator determines a first representative normal sinus rhythm (NSR) signal and a second representative NSR signal from the plurality cardiac complexes sensed during NSR; and

when the signal feature comparison circuit determines the time difference is lower than the template time difference value, the template generator compares the morphology of the first signal to the morphology of the first representative NSR signal and the morphology of the second signal to the morphology of the second representative NSR signal to determine whether the tachycardia complex is a ventricular tachycardia complex.

40. The system of claim 39, where the template generator aligns the first feature on the first signal with the first feature on the first representative NSR signal, and compares the morphology of the second signal to the morphology of the second representative NSR signal to determine whether the tachycardiac complex is a ventricular tachycardia complex.

41. The system of claim 39, where the template generator aligns the second feature on the second signal with the second feature on the second representative NSR signal, and compares the morphology of the first signal to the morphology of the first representative NSR signal to determine whether the tachycardiac complex is a ventricular tachycardia complex.

42. The system of claim 39, where

the morphology analyzer circuit locates one or more features of the first

signal, which include a first portion of the cardiac complex which is repeatably identifiable in subsequent cardiac complexes, and locates one or more features of the second signal, which include a second portion of the cardiac complex which is repeatably identifiable in subsequent cardiac complexes;

the template generator generates a comparison template from cardiac complexes sensed during normal sinus rhythm, where the comparison template has a plurality of values derived from the one or more features on the first signal and the second signal, and for the tachycardia complex the template generator determines the plurality of values derived from the one or more features of the first signal and the one or more features of the second signal and compares each of the plurality of values of the tachycardia complex to each corresponding value in the comparison template; and

the control system designates the tachycardiac complex as a ventricular tachycardia complex when one or more of the plurality of values of the tachycardia complex exceed the corresponding value in the comparison template by a predetermined margin.

43. The system of claim 42, where the template generator generates the comparison template from time differences between the one or more features on the first signal and the second signal.

44. The system of claim 42, where

the morphology analyzer circuit locates one or more features of a third signal, where each of the one or more features include a third portion of the cardiac complex which is repeatably identifiable in subsequent cardiac complexes;

the template generator generates a comparison template from cardiac complexes sensed during normal sinus rhythm, where the comparison template has the plurality of values derived from the one or more features on the first signal, the

second signal, and the third signal, and for the tachycardia complex the template generator determines the plurality of values derived from the one or more features of the first signal, the one or more features of the second signal and the one or more features of the third signal, and compares each of the plurality of values of the tachycardia complex to each corresponding value in the comparison template; and

the control system designates the tachycardiac complex as a ventricular tachycardia complex when one or more of the plurality of values of the tachycardia complex exceed the corresponding value in the comparison template by a predetermined margin.

45. The system of claim 44, where the template generator generates the comparison template from time differences between the one or more features on the first signal, the second signal and the third signal.

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